INVESTIGATOR'S ANNUAL REPORT

National Park Service

All or some of the information provided may be available to the public

Reporting Year: 1999	**Park:** Shenandoah NP
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Permit#:
SHEN1999N-84

Park-assigned Study Id. #:
unknown

Project Title:
Impact Of Acid Rain On Geologically Sensitive Watersheds

Permit Start Date: Jan 01, 1999	**Permit Expiration Date** Jan 01, 2000
Study Start Date: Jan 01, 1982	**Study End Date** Jan 01, 2010

Study Status:
Completed

Activity Type:
Research

Subject/Discipline:
Geochemistry (inc. Minerals / Petrology)

Objectives:
To assess the impact of acid rain on a watershed underlain by granite. To define and quantify the role of mineral-water interactions in neutralizing acid deposition in such watersheds. To determine the processes that control the composition of natural waters in minimally disturbed watersheds on acid sensitive rock types. To determine the factors that are most important in regulating the rate and extent of equilibration of acid deposition with watershed materials.

Findings and Status:
Since investigations began in 1982, statistically significant downtrends in base cations, SO4, NO3 and CL were observed in precipitation. In stream water , downward trends were observed in base cations, silica and ANC, no trend was observed in SO4 and an increasing trend occurred in NO3. The major reactions neutralizing acid rain in the system involve feldspars in the bedrock. We collaborated with a Ph.D. student from UVA on weathering reactions (mineral-water interacions) and with 2 MS students who used this site for masters thesis in hydrology.

For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?
No

Funding provided this reporting year by NPS: 0	**Funding provided this reporting year by other sources:** 10000

Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college

Full name of college or university:	**Annual funding provided by NPS to university or college this reporting year:**

n/a	0